Hearing Screenings and Autism: Identifying and Addressing Barriers

Marcus D. Strum[1,2], Samantha Bergmann[1], Karen Rader[1], Erin Schafer[1], Erin Hill[1,2], and Williams Espericueta-Luna[3]

[1]University of North Texas, [2]Kristin Farmer Autism Center, [3]University of Florida

DEPARTMENT OF BEHAVIOR ANALYSIS
College of Health & Public Service
UNT EST. 1890

UNT KRISTIN FARMER AUTISM CENTER

Introduction

- Children are required to complete hearing screenings on a regular basis (Bower et al., 2023).
- Children with autism are less likely to complete a hearing screening compared to neurotypical peers (Meagher et al. 2021).
- Prior literature has examined methods to teach children to complete medical exams (Cuvo, 2011).

Participants

Four children diagnosed with ASD and without hearing loss:

- Luke (age 7)
- Hailey (age 7)
- Manny (age 6)
- Phil (age 11)

Materials & Setting

- Auditory stimuli were presented using a tablet-based audiometer and calibrated headphones.
- Sessions were conducted in a university-based autism center.

Study 1 Goals

Assess performance of children with autism across two hearing screening procedures.

Identify errors that impeded completion of at least one hearing screening procedure.

Study 1 Method

Pure tone: Participant raises their hand in the presence of an auditory stimulus.

Pure Tone Screening Steps:

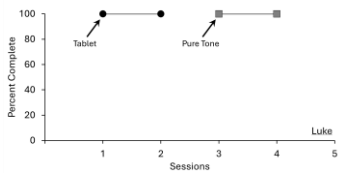
1. Approach the testing table.
2. Wait while headphones are placed.
3. Listen for the auditory stimulus.
4. Raise hand when tone is heard.
5. Repeat steps 3-4 until complete.

Tablet: Participant selects between two icons to indicate the presence or absence of an auditory stimulus.

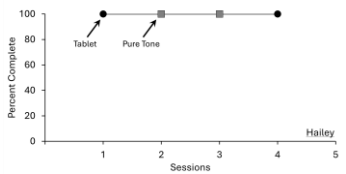
Tablet-Based Screening Steps:

1. Approach the testing table.
2. Wait while headphones are placed.
3. Press blue icon in center of screen.
4. Select left icon if tone is audible.
5. Select right icon if tone is inaudible.
6. Repeat steps 3-5 until complete.

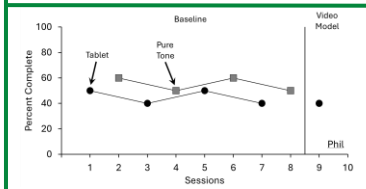
Study 1 Results



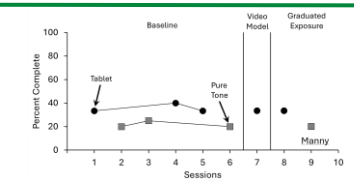
Luke completed both screenings in Study 1.



Hailey completed both screenings in Study 1.



Phil did not reliably discriminate between the presence and absence of auditory stimuli.



Manny refused to wear headphones in both screenings.

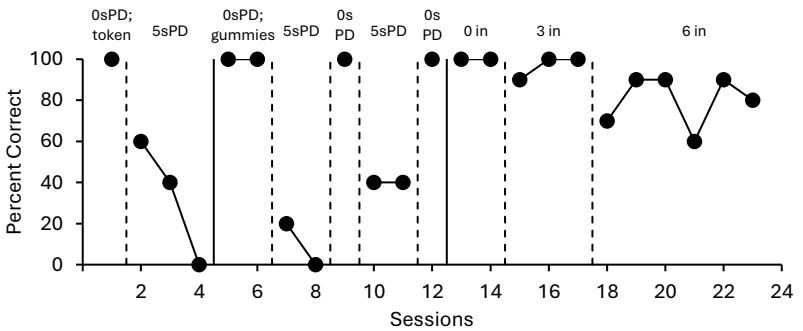
Study 2 Goals

Apply individualized behavior-intervention packages to address errors from Study 1.

Re-assess screening performance after meeting criteria to complete target step.

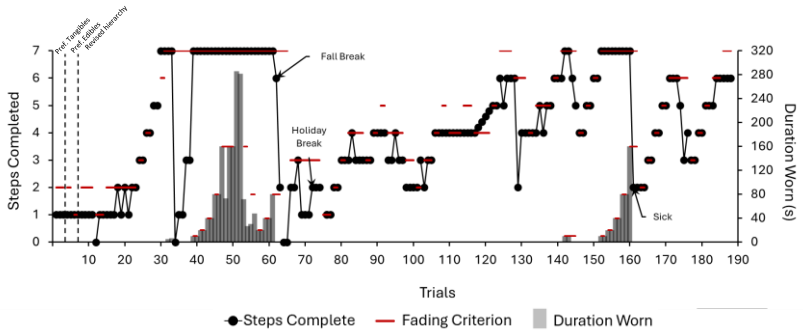
Study 2 Method & Results

Phil: Differential reinforcement with time-delay and distance fading



We first used an immediate gestural prompt (pointing) before inserting a 5-second delay to the prompt. We then attempted to fade the prompt by increasing the distance at which the prompt was presented.

Manny: Graduated exposure with differential reinforcement



We used a graduated exposure procedure with differential reinforcement and without escape extinction. If Manny did not complete a step, the headphones were removed. If he completed a step, the headphones were removed, and he was given a highly preferred edible.

Discussion

In study 1, two participants completed both screenings; and two participants did not complete either screening.

Phil did not respond reliably in the presence of auditory stimuli, and Manny refused to wear the headphones.

Phil did not meet mastery criteria to respond in the presence and absence of auditory stimuli.

Manny did not meet criteria to complete the step of wearing headphones in post-training probes.

Participation was limited to 10, 1-hour appointments.

Due to limited time, we did not conduct formal preference or reinforcer assessments.

References & Acknowledgements

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